AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-9. (canceled)

10. (previously presented) An image analysing focusing device for an infrared optical apparatus (10) comprising:

a controllable optical convergence element (20);

an image detector (30) arranged so as to receive an image of an object projected by the optical convergence element; and

a processor arranged so as to receive signals from the image detector and to generate control signals to control the optical convergence element (20) to focus the image of the object onto the image detector (30);

wherein the processor comprises a search element constructed and arranged so as to analyze the image on the image detector (30) to select at least one image window in the image in connection with which a focusing operation is to be performed in accordance with predetermined conditions; and

wherein the processor further comprises a focusing element (150) in the processing means (40) constructed and arranged so as to control the optical convergence element so as

to focus a portion of the image within the at least one image window using an iterative process;

wherein the iterative process comprises the steps of: performing a coarse focusing using only a first range of spatial frequency components of the image; and

after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range;

wherein the predetermined conditions comprise estimation of a distance from the apparatus (10) to a viewed object based on information on temperature and/or position of the optical convergence means (20).

11. (original) Device as claimed in claim 10, characterised in that the predetermined conditions comprise estimation of a distance from the apparatus (10) to a viewed object based on information on temperature and/or position of the optical convergence means (20) comprising at least one of the options:

presenting estimated distance to the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated distance and inaccuracy;

presenting data only when the search operation means (140) has obtained an acceptable focus position.

12. (original) Device as claimed in claim 10, characterised in that an estimation of the temperature of a viewed object is done based on information on an estimation of distance from the apparatus (10) to a viewed object provided by the calibration device (110), optics temperature and/or position of the optical convergence means (20).

13. (original) Device as claimed in claim 12, characterised in that an estimation of the temperature of a viewed object is done based on information on a distance from the apparatus (10) to a viewed object, optics temperature focus position of the optical convergence means (20) comprising at least one of the options:

presenting estimated temperature of the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated temperature and inaccuracy;

presenting data only when the search operation means (140) has obtained an acceptable focus position.

14-26. (canceled)

27. (previously presented) An image analysing focusing method for an infrared optical apparatus (10) comprising controllable optical convergence element (20), an image detector (30) arranged so as to receive an image of an object projected by the optical convergence element (20), a processor arranged so as to receive signals from the image detector and to generate

control signals to control the optical convergence element (20) to focus the image of the object onto the image detector (30), the focusing method comprising the steps of:

analyzing the image on the image detector (30) to find at least one image window in the image for which a focusing is to be done in accordance with predetermined conditions; and

providing a focusing on the at least one image window based on providing as distinct differences between individual detecting positions (pixels) within the image window as possible using an iterative process comprising the steps of:

performing a coarse focusing using only a first range of spatial frequency components of the image; and

after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range;

wherein the predetermined conditions of the focusing comprise use of a focus function of the form $FMF(z) = \frac{1}{N}\sum(K \otimes I_z - m)^2$, where K is an operator, N a factor of normalisation and m is a variable.

28. (original) Method as claimed in claim 27, characterised in that the operator values of the focus function comprise: K= [1 1 1], K=[1-1], K= [10-1] and K=[1].

29. (previously presented) Method as claimed in claim 28, characterised in that use of the operator values of the focus function is made with a variation depending on individual requirements of each system, by applying the operator functions in more than one direction in the image.

30-42. (canceled)

43. (currently amended) ~~The device of claim 42,~~ A focusing device for an infrared optical apparatus comprising:

a controllable optical convergence element;

an image detector arranged so as to receive an image of an object projected by the optical convergence element and to generate an image signal based on the received image; and

a processor arranged so as to receive the image signal and to generate control signals to control the optical convergence element to focus the image of the object onto the image detector;

wherein the processor is constructed and arranged to generate the control signals based on selected components of said image signal from the image detector that represent at least one image window in the image using an iterative process;

wherein the iterative process comprises the steps of:

performing a coarse focusing using only a first range of spatial frequency components of the image using a "hill-climbing" technique; and

after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range, the fine focusing step using a "curve-fitting" technique comprising adapting a mathematical function and calculating a maximum value of said function;

wherein the device is constructed and arranged to perform semi-automatic or fully automatic calibration of the relation between at least two of the following parameters:

distance from the device to a viewed object;

temperature of the optical convergence element;

and

focus position of the optical convergence element;

wherein the device is constructed and arranged to estimate a distance from the device to the viewed object based on information on at least one of temperature and position of the optical convergence element.

44. (previously presented) The device of claim 43, wherein the device is constructed and arranged to estimate the distance from the device to the viewed object based on information on at least one of temperature and position of the optical convergence element, the device further providing at least one of the options:

presenting estimated distance to the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated distance and inaccuracy;

presenting data only when the device has obtained an acceptable focus position.

45. (previously presented) The device of claim 43, wherein the device produces an estimation of the temperature of the viewed object based on information on an estimation of distance from the device to the viewed object provided by at least one of the calibration device, optics temperature, and position of the optical convergence element.

46. (previously presented) The device of claim 45, wherein the device produces an estimation of the temperature of the viewed object based on information on an estimation of distance from the device to the viewed object provided by at least one of the calibration device, optics temperature, and position of the optical convergence element, the device further providing at least one of the options:

presenting estimated temperature of the viewed object;

presenting inaccuracy of the estimation;

presenting a combination of the above estimated temperature and inaccuracy;

presenting data only when the device has obtained an acceptable focus position.

47-62. (canceled)